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PATENT APPLICATION TRANSMITTAL LETTER
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Docket No.
INTL-0450-US (P9561)

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

JIM B. ESTIPONA

For: **TERMINATING ENHANCED TELEVISION BROADCASTS**

Enclosed are:

- ☒ Certificate of Mailing with Express Mail Mailing Label No. **EL445651475US**
- ☒ **Five (5)** sheets of drawings.
- ☐ A certified copy of a application.
- ☒ Declaration ☒ Signed. ☐ Unsigned.
- ☒ Power of Attorney
- ☐ Information Disclosure Statement
- ☐ Preliminary Amendment
- ☒ Other: **Recordation Form Cover Sheet; Assignment and check for $40.**

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra		Rate	Fee
Total Claims	30	- 20 =	10	x	$18.00	$180.00
Indep. Claims	5	- 3 =	2	x	$78.00	$156.00
Multiple Dependent Claims (check if applicable) ☐						$0.00
					BASIC FEE	$690.00
					TOTAL FILING FEE	$1,026.00

- ☒ A check in the amount of **$1,026.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **20-1504** as described below. A duplicate copy of this sheet is enclosed.
  - ☐ Charge the amount of as filing fee.
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  - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: **September 18, 2000**

Signature

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INTL-0450-US
(P9561)

APPLICATION

FOR

UNITED STATES LETTERS PATENT

TITLE: **TERMINATING ENHANCED TELEVISION BROADCASTS**

INVENTOR: **JIM B. ESTIPONA**

Express Mail No.: EL445651475US

Date: September 18, 2000

TERMINATING ENHANCED TELEVISION BROADCASTS

Background

This invention relates generally to enhanced television broadcasts which are also sometimes known as interactive television broadcasts.

In enhanced television or interactive broadcasts, a television program may be broadcast together with certain enhancements. The enhancements may in some cases be related to the television program and may be accessed through hypertext markup language documents. These documents may be transmitted with the television program or may be accessible independently from the program, for example over the Internet. Thus, in many cases, the enhancements add to the information that viewers can obtain about a particular program.

Conventionally, the enhancements relate to a particular television program. At the end of that program therefore, it may be desirable to terminate the availability of the enhancement. Otherwise, viewers may become confused because enhancements associated with one program may then be accessed during subsequent programs.

One applicable specification, the ATVEF Specification, suggests that script or other scripting mechanisms be utilized to terminate the enhancements at the end of a

television program. See Advanced Television Enhancement Forum (ATVEF) Enhanced Content Specification, v. 1.1r26 (1998-99) (hereinafter the "ATVEF Specification"). However, the ATVEF Specification provides no particular technique to do so. Using scripts or scripting mechanisms may add complexity.

In addition, problems may arise with respect to terminating enhancements automatically at the end of the program. For example, a viewer may be viewing an enhancement associated with one program and may not care about the ensuing program. Instead, the viewer may wish to continue to view enhancements related to a previous program regardless of the ensuing program. Therefore, adopting the approach suggested in the ATVEF Specification may be annoying for some viewers.

Thus, there is a need for better ways to ensure that enhancements associated with one program are not inadvertently made available during an ensuing program.

Brief Description of the Drawings

Figure 1 is an architecture level view of an enhanced television broadcast system in accordance with one embodiment of the present invention;

Figure 2 is a schematic depiction of the system shown in Figure 1;

Figure 3 is a depiction of a graphical user interface or screen display in accordance with one embodiment of the present invention;

Figure 4 is a graphical user interface or screen display in accordance with one embodiment of the present invention;

Figure 5 is a flow chart for software that may be utilized on the head end of the system shown in Figure 1 in accordance with one embodiment of the present invention; and

Figure 6 is a flow chart for software which may be utilized on a receiver in the embodiment shown in Figure 1 in accordance with one embodiment of the present invention.

Detailed Description

Referring to Figure 1, an enhanced television broadcasting system or interactive television system may include a head end or server 100 that broadcasts television content together with announcements and triggers over a transport 12 to a plurality of receivers 10. Among the possible transports 12 are an airwave broadcast, a satellite transmission, an Internet network and a cable system. The head end may broadcast the content together with the enhancements or the enhancements may be accessed using triggers that accompany the broadcast over the transport 12.

A trigger is a real time event for an enhanced television program broadcast, for example in accordance with the ATVEF Specification. Generally, triggers include attributes as well as a Uniform Resource Locator or URL. The URL may provide information about where to access a particular resource associated with an enhancement. The resource may be the actual content of the enhancement. In some cases, the resource may be cached on the receiver 10 or, in other cases, the trigger may facilitate accessing the resource at a remote location, for example over the Internet.

While Figure 1 illustrates a system where the head end 100 broadcasts directly to a receiver 10, in some cases, the head end 100 may broadcast to an intermediate retransmitter, such as a network operating center (not shown), that then broadcasts to a plurality of receivers 10.

In some embodiments of the present invention, the broadcast mechanism may include the use of Internet Protocol packets that encapsulate television content together with announcements and triggers, as well as enhancements in some cases. Thus, the broadcast may be in accordance with known specifications such as the ATVEF Specification in some embodiments.

The head end 100 may be a processor-based system that includes a storage 102 that may store software 70 for

inserting triggers into the broadcast stream. Similarly, each receiver 10 may be a processor-based system that includes a storage 106 that stores trigger listener software 80. The software 80 listens or monitors for the triggers inserted by the head end 100 and processes them in a fashion that will be described hereinafter.

Referring next to Figure 2, an example of one interactive broadcasting system is illustrated. In this example, the head end 100 may provide the enhanced broadcast to a satellite transport 12 as one example. The satellite transport 12 may then implement a digital or analog transmission to a plurality of receivers 10.

Each receiver 10 may include a video subsystem 14 that includes a line 21 filter 16. The line 21 filter extracts information, for example out of the vertical blanking interval (VBI) and provides it to a trigger listener 20a. The trigger listener 20a operates in accordance with a type A transport medium specified in the ATVEF Specification. In a type A transport, the actual resource may be accessed over the Internet or at another remote location and is not conventionally broadcast with the rest of the enhanced television content.

The trigger listener 20a detects a trigger and passes a message to a trigger receiver object 22a. The trigger receiver object (TRO) 22a, in accordance with the ATVEF Specification for example, is an application level software

program that handles the processing of received triggers. The trigger receiver object 22a then is able to use an appropriate protocol such as the hypertext transfer protocol or http: protocol to access a resource over the Internet 26a using a channel 24. The channel 24 is conventionally a telephone line or other backchannel that may be utilized to access a resource.

The video subsystem 14 may display the television program on a suitable television receiver 18. While an analog system is illustrated in Figure 2, the present invention is equally applicable to digital broadcasting systems as well.

Similarly, a trigger receiver object 22b is utilized for a type B transport in accordance with an embodiment following the ATVEF Specification. In a type B transport the enhancement may be transmitted with the television content, for example over the Internet 26b. The received multicast is analyzed by a trigger listener 20b, announcement listener 50 and resource listener 52. Resources or enhancements may be cached in the cache 54. The trigger listener 20b communicates with a trigger receiver object 22b.

A tv: protocol filter 36 filters the tv: protocol from a trigger receiver object 22 and accesses a full television screen resource with embedded trigger receiver objects 37. Thus, the filter 36 identifies the tv: protocol within a

trigger and in response thereto generates a full screen display.

Referring to Figure 3, the frame makeup of the interface displayed on a television receiver 18 may be controlled by the code that is included with the television enhancements. Thus, as one example, a television frame display 66 may be displayed on the screen 60; however, the screen 60 may be broken up into other frames or fields including an enhancement information frame 64 and a control bar 62.

The enhancement information frame 64 enables the user to select enhancements associated with the current television display frame 66. The control bar 62 may allow the user to select various functions available with the enhanced broadcast. Of course, a wide variety of other screen formats and framing may be selected by creators to meet particular needs. However, the display shown in Figure 3 is illustrative of the circumstance where not only may a viewer watch television but at the same time, the viewer can select enhancement information from the frame 64, for example using a mouse function available through a remote control (not shown).

The problem arises that when a first program ends and a new program starts, the user can continue to access enhancements associated with the first program. It may be desirable in some embodiments to remove the possibility of

accessing first program enhancements, for example through the enhancement information field 64, at or near the end of the first program. This is in keeping with the suggestion incorporated into the ATVEF Specification that enhancements should not be automatically made available in ensuing television programs.

Referring to Figure 4, a full screen television display 66 may replace the display shown in Figure 3. For example, in accordance with one embodiment of the present invention, a trigger may include the tv: protocol at the end of a television program. Upon receipt of this protocol, the tv: filter 36 automatically transitions the screen display 60 to a full screen television. This necessarily removes the capability of accessing enhancements since the viewer may no longer have access to the frame 64 that enables the selection of enhancement information.

Thus, going to full screen at the end of the program may serve two equally important functions. Firstly, it may advise the viewer that the end of a first program is approaching or has arrived and a new program is available. Secondly, it may remove the possibility of accessing enhancements associated with the first program at a time when those enhancements may be disabled or would otherwise be confusing because of the arrival of the new program. In other words, it makes it more difficult for the user to

automatically continue watching enhancements that do not apply to a new program.

While the use of the tv: protocol is a very effective way to automatically achieve both functions, other screen displays may be utilized to accomplish one or both functions. As a simple example, the screen display may simply transition to a display that says the user should no longer activate enhancements since a new program is about to start. Any number of web pages may be accessed from locally cached resources or over the Internet to facilitate one or both of the above-described functions without using the tv: protocol.

Referring to Figure 5, the insert trigger software 70, available on the head end 100, begins by determining whether a program has been received for transmission as indicated in diamond 72. If so, a warning trigger may be inserted as indicated in block 74. The warning trigger may be inserted into the stream of program information, at a point sufficiently before the end of the program, to warn the user that either the user should complete the use of enhancements or be prepared for the availability of those enhancements to end at the end of a program. It may also give the user sufficient time to designate that enhancements, associated with the ongoing program, should not be replaced with the new enhancements. Thus, the warning trigger provides an early warning to the user that

the ability to freely access enhancements is about to be taken away, absent action by the viewer.

Next, a "full screen" trigger may be inserted as indicated in block 76. In one embodiment, the full screen trigger may include a tv: protocol URL, but, as mentioned above, a number of other triggers may accomplish similar functions. Thereafter, the triggers and content may be broadcast as indicated in block 78.

As a result, the television program may play with the associated enhancements. At a desired interval, for example five or ten minutes before the end of the program, an on-screen warning may be provided to indicate to the viewer that the program is about to end and the enhancements may also end. For example, the warning trigger may cause an overlay to appear on the user's screen 60 indicating that program is ending or enhancements are ending, as two examples. Thereafter, associated with the approximate end of the program, the program display may be transitioned from the format of Figure 3 to the full screen television display shown in Figure 4 in accordance with one embodiment of the invention. In this full screen television state, the user can no longer readily acquire the enhancements associated with the preceding and now ending program.

The corresponding software 80 on a receiver 10, shown in Figure 6, begins by determining whether a warning

trigger has been received as indicated in diamond 82. If so, the warning URL may be utilized (block 84) to display an associated web page, warning the user that the enhancements are about to end absent user action.

A check at diamond 86 determines whether the .releasable property (triggerReceiverObj.releasable) is active. The .releasable property enables or disables the viewer from maintaining enhancements associated with one program during an ensuing program. Depending on the nature of the .releasable property, those enhancements may be inaccessible. In some cases, the check at diamond 86 may afford the viewer an opportunity to select enhancement retention or the ability to maintain access to enhancements from one program, during an ensuing program.

As an example, a viewer watching a program about animals, may read an associated enhancement in the form of a web page giving detailed information about a particular animal. The viewer may wish to continue reading that enhancement and may not wish to have that enhancement interrupted with an ensuing program, that the viewer may not even want to watch. Thus, that viewer may elect to preserve enhancements as indicated in block 88.

Next a check at diamond 90 determines whether the full screen trigger has been received. This trigger may include the tv: protocol URL in one embodiment. If so, the full screen display is activated as indicated in block 92.

Again, the resulting transition may correspond to going from the screen format shown in Figure 3 to the screen format shown in Figure 4 wherein enhancement information is no longer accessible.

In some embodiments of the present invention, the viewer is both notified that enhancements are no longer available, and potentially disabled from continuing to access enhancements associated with one program during an ensuing program. The user may actually be given a warning sufficient to enable the user to specify that enhancements associated with one program can in fact continue to be accessed during an ensuing program. Thus, in some embodiments of the present invention, the desirability of avoiding automatic carryover of enhancements into the ensuing program is achieved while enabling the user to select a suitable override if desired.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

1. A method comprising:

transmitting an enhanced television program; and

transmitting a real-time event that indicates the end of the program.

2. The method of claim 1 including causing the display screen of a receiver that receives said enhanced television program to transition to a full screen display of television.

3. The method of claim 2 including causing the display screen of a receiver to display at least two frames, only one of said frames being a television display and selectively causing the screen to transition to a full screen television display in response to the real-time event.

4. The method of claim 1 including transmitting said real-time event through an Internet Protocol multicast.

5. The method of claim 1 wherein transmitting a real-time event includes transmitting a trigger.

6. The method of claim 5 wherein transmitting a trigger includes transmitting a trigger with a Uniform Resource Locator.

7. The method of claim 6 wherein transmitting a Uniform Resource Locator includes transmitting a Uniform Resource Locator using the tv: protocol.

8. The method of claim 1 including transmitting a real-time event that warns that the end of a program is approaching.

9. The method of claim 8 including enabling the user to elect to retain enhancements after receiving said real-time event warning of the end of the program.

10. An article comprising a medium storing instructions that enable a processor-based system to:

transmit an enhanced television program; and

transmit a real-time event that indicates the end of the program.

11. The article of claim 10 further storing instructions that enable the processor-based system to cause the display screen of a receiver receiving said enhanced television program to transition to a full screen display of television.

12. The article of claim 11 further storing instructions that enable the processor-based system to cause the display screen of a receiver to display at least two frames, only one of said of frames being a television display and selectively causing the screen to transition to full screen television display in response to the real-time event.

13. The article of claim 10 further storing instructions that enable the processor-based system to transmit a real-time event in the form of a trigger.

14. The article of claim 13 further storing instructions that enable the processor-based system to transmit a real-time event that warns that the end of the program is approaching.

15. The article of claim 13 further storing instructions that enable the processor-based system to transmit a trigger including a Uniform Resource Locator in the form of the tv: protocol.

16. The article of claim 14 further storing instructions that enable the processor-based system to enable the user to elect to retain enhancements after

receiving said real-time event warning of the end of the program.

17. A system comprising:

a processor-based device; and

a storage coupled to said processor-based device storing instructions that enable the processor-based device to transmit a real-time event that indicates the end of an enhanced television program.

18. The system of claim 17 wherein said storage stores instructions that enable the processor-based device to transmit a trigger that indicates the end of the program.

19. The system of claim 18 wherein said storage stores instructions that enable the processor-based device to transmit a trigger including a Uniform Resource Locator using the tv: protocol.

20. The system of claim 17 wherein said storage stores instructions that enable the processor-based device to transmit a real-time event that warns that the end of an enhanced television program is approaching.

21. The system of claim 20 wherein said storage stores instructions that enable the user to elect to retain enhancements after receiving said real-time event warning of the end of the program.

22. A method comprising:

receiving an enhanced television program; and

identifying a real-time event that indicates the end of the program.

23. The method of claim 22 including causing a display screen to transition to a full screen display of television in response to receipt of said event.

24. The method of claim 23 including causing the display screen to display at least two frames, only one of said frames being a television display and selectively transitioning the screen to a full screen television display in response to the real-time event.

25 The method of claim 22 including listening for a trigger with a Uniform Resource Locator using the tv: protocol.

26. The method of claim 1 including receiving a real-time event that warns that the end of a program is approaching.

27. An article comprising a medium storing instructions that enable a processor-based system to:

receive an enhanced television program; and

identify a real-time event that indicates the end of the program.

28. The article of claim 27 further storing instructions that enable the processor-based system to cause the display screen to transition to a full screen display of television.

29. A system comprising:

a processor-based device; and

a storage coupled to said processor-based device storing instructions that enable the processor-based device to identify a real-time event that indicates the end of an enhanced television program.

30. The system of claim 29 wherein said storage stores instructions that enable the processor-based device to recognize a real-time event that warns that the end of an enhanced television program is approaching.

TERMINATING ENHANCED TELEVISION BROADCASTS

Abstract of the Disclosure

An enhanced television broadcast system may enable the transmission and reception of a real-time event when a new program is about to begin. The real-time event may control access to enhancements from the program that is ending. In some embodiments, these real-time events may constitute triggers that are included within packets transmitted in an Internet Protocol multicast. As one example, the trigger may include a Uniform Resource Locator in the form of a tv: protocol that automatically causes the television display to go to full screen television.

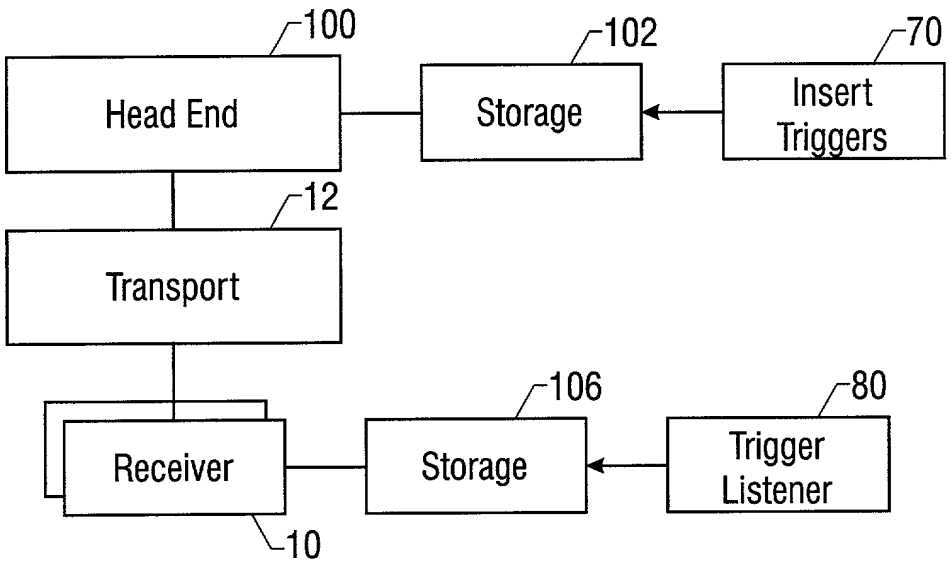
100
Head End
102
Storage
70
Insert
Triggers
12
Transport
106
Receiver
Storage
80
Trigger
Listener
10

FIG. 1

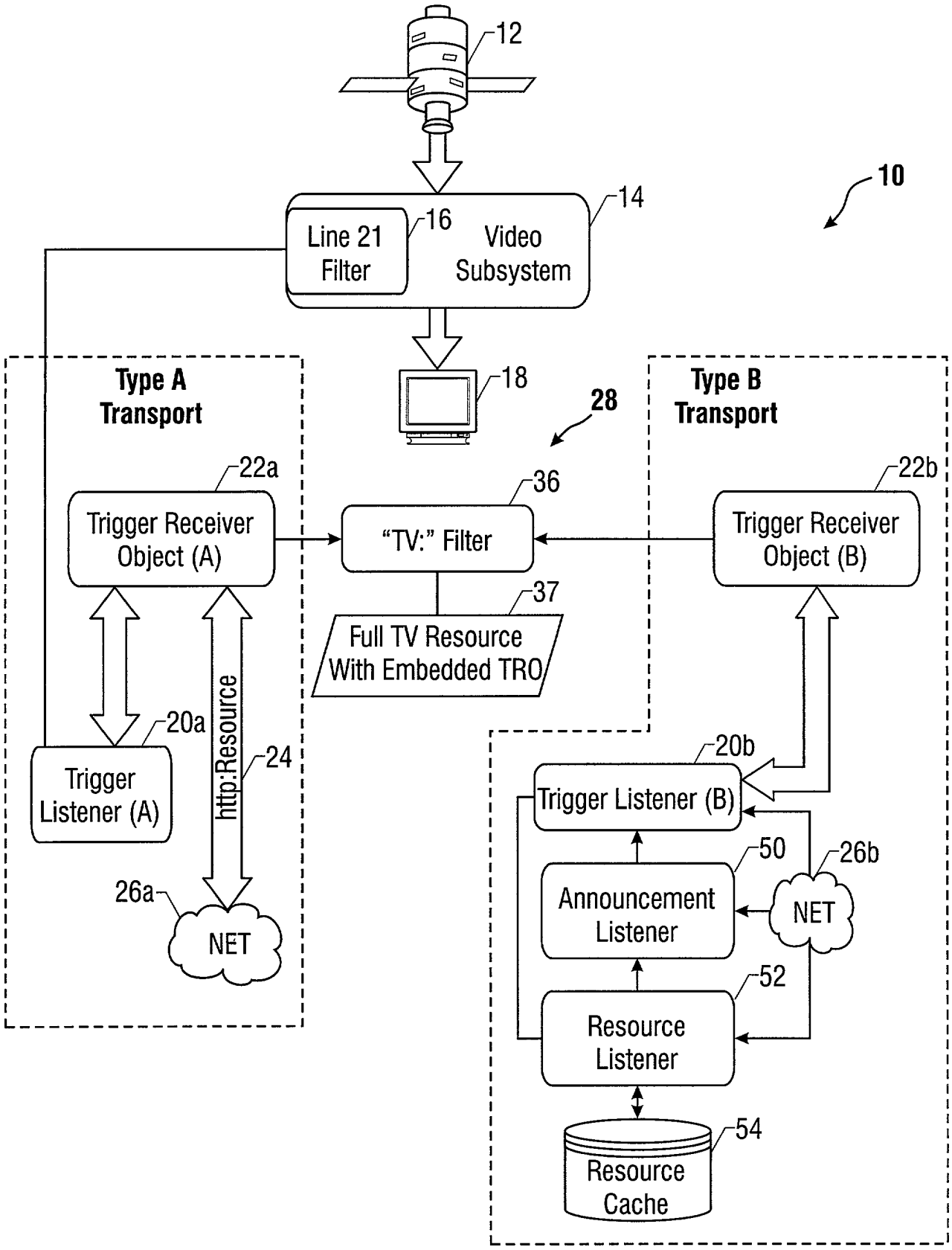
12
10
14
Line 21 Filter
16
Video Subsystem
18
28
Type A Transport
Type B Transport
22a
22b
36
Trigger Receiver Object (A)
"TV:" Filter
Trigger Receiver Object (B)
37
Full TV Resource With Embedded TRO
20a
20b
Trigger Listener (A)
http:Resource
24
Trigger Listener (B)
50
26b
Announcement Listener
NET
26a
NET
52
Resource Listener
54
Resource Cache

FIG. 2

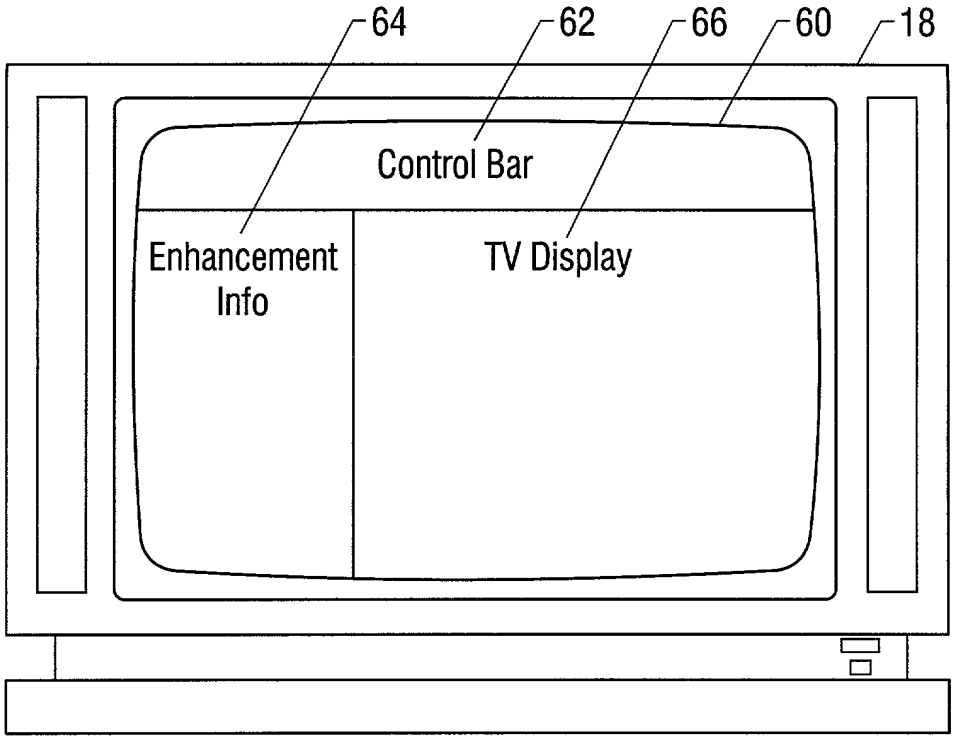
64
62
66
60
18
Control Bar
Enhancement Info
TV Display

FIG. 3

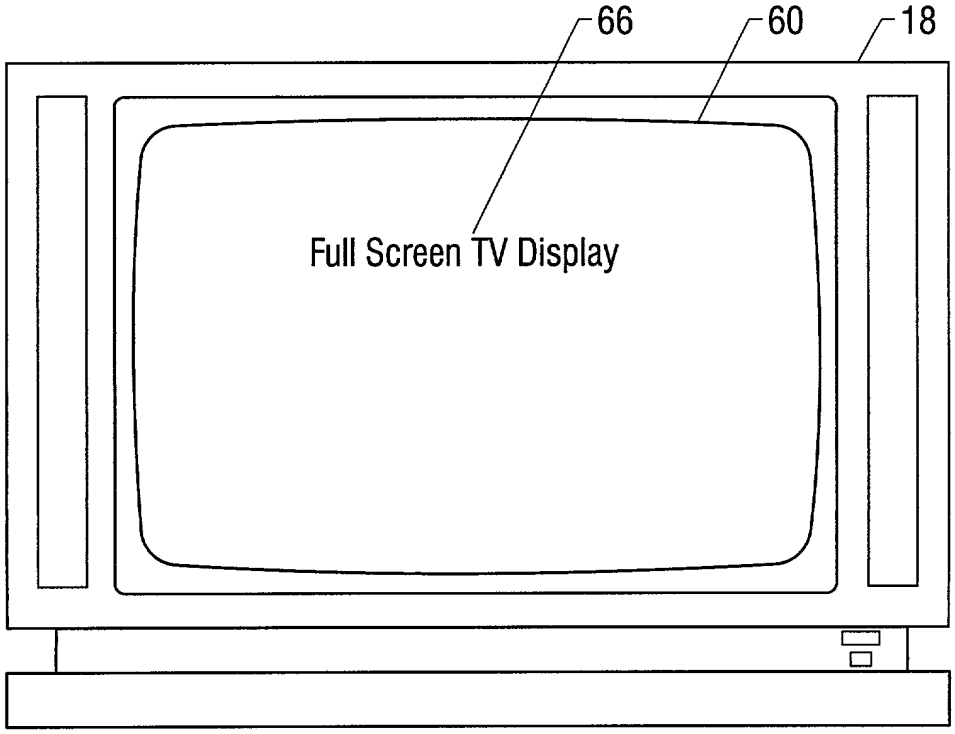
66
60
18
Full Screen TV Display

FIG. 4

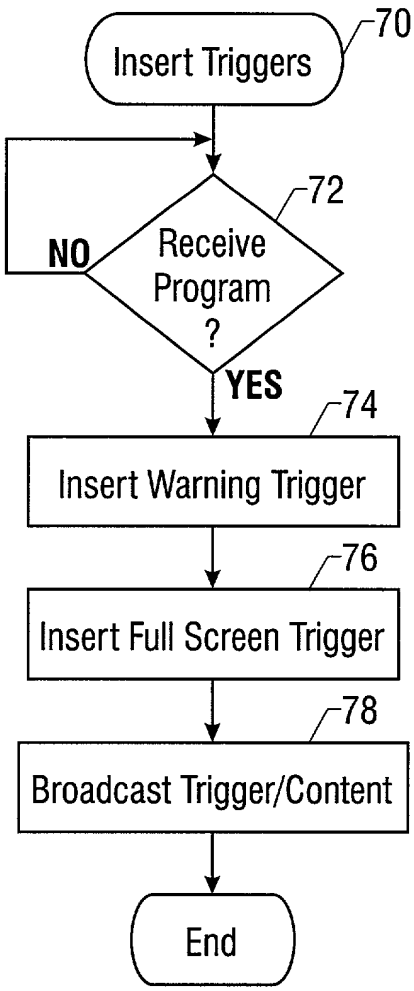
Insert Triggers
70
72
NO
Receive Program ?
YES
74
Insert Warning Trigger
76
Insert Full Screen Trigger
78
Broadcast Trigger/Content
End

FIG. 5

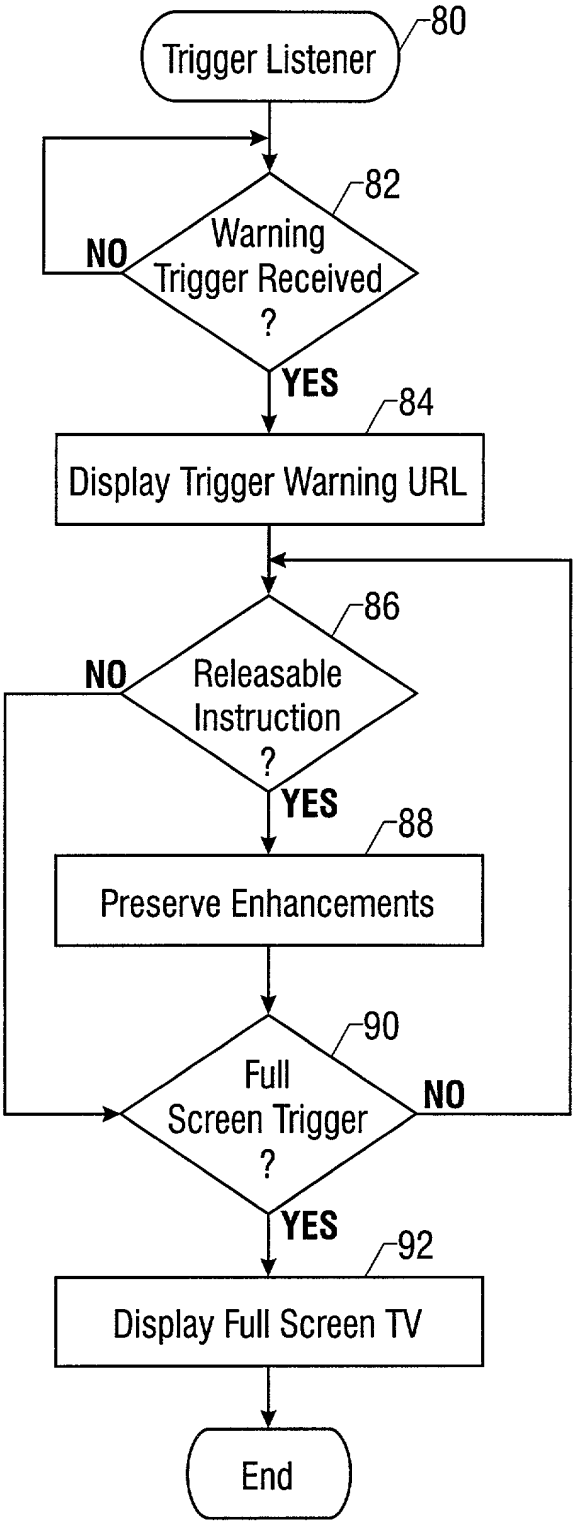
Trigger Listener
80
82
Warning Trigger Received ?
NO
YES
84
Display Trigger Warning URL
86
Releasable Instruction ?
NO
YES
88
Preserve Enhancements
90
Full Screen Trigger ?
NO
YES
92
Display Full Screen TV
End

FIG. 6

Attorney's Docket No.: INTL-0450 -US (P9561) PATENT

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

TERMINATING ENHANCED TELEVISION BROADCASTS

the specification of which

X	is attached hereto.
	was filed on _____ as
	United States Application Number _____
	or PCT International Application Number _____
	and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate Issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of the United States provisional application(s) listed below:

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Number)	Filing Date	(Status-patented, pending, abandoned)
(Application Number)	Filing Date	(Status-patented, pending, abandoned)

I hereby appoint Timothy N. Trop, Reg. No. 28,994; Fred G. Pruner, Jr., Reg. No. 40,779 and Dan C. Hu, Reg. No. 40,025 my patent attorneys, of TROP, PRUNER & HU, P.C., with offices located at 8554 Katy Freeway, Ste. 100, Houston, TX 77024, telephone (713) 468-8880, and Mirho, Charles A.; Registration No. 41,199; Novakoski, Leo V.; Registration No. 37,198; Reynolds, Thomas C.; Registration No. 32,488; Seddon, Kenneth M.; Registration No. 43,105; Seeley, Mark; Registration No. 32,299; Skabrat, Steven P.; Registration No. 36,279; Skaist, Howard A.; Registration No. 36,008; Su, Gene I.; Registration No. 45,140; Wells, Calvin E.; Registration No. 43,256; Werner, Raymond J.; Registration No. 34,752; Winkle, Robert G.; Registration No. 37,474; and Young, Charles K.; Registration No. 39,435 my patent attorneys, of INTEL CORPORATION with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Timothy N. Trop, TROP, PRUNER & HU, P.C., 8554 Katy Freeway, Ste. 100, Houston, TX 77024 and direct telephone calls to Timothy N. Trop, (713) 468-8880.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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